M



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/820,077 | 04/07/2004 | Raef M. Tadros | DAM 597-03 | 7224 |

24211 7590 01/12/2006

US ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND
OFFICE OF THE CHIEF COUNSEL/IP TEAM (BLDG E4435)
5183 BLACKHAWK ROAD
APG, MD 21010-5424

| EXAMINER | |
|---|---|
| PARSLEY, DAVID J | |
| **ART UNIT** | **PAPER NUMBER** |
| 3643 | |

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/820,077 | TADROS ET AL. | |
| | Examiner | Art Unit | |
| | David J. Parsley | 3643 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *30-35* is/are withdrawn from consideration.

5)☒ Claim(s) *21-24* is/are allowed.

6)☒ Claim(s) *1-20 and 25-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

# Detailed Action

## *Election/Restrictions*

1. Applicant's election of Group I claims 1-29 in the reply filed on 11-2-05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 30-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11-2-05.

## *Claim Objections*

2. Claim 19 recites the limitation "the shell body" in line 4. There is insufficient antecedent basis for this limitation in the claim.

## *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,612,857 to Beatty.

Referring to claim 25, Beatty discloses a drag assembly – at 22,23,51, for a canister – at 11,16, of a cartridge comprising at least one streamer – at 23, adapted to slow the descent of the canister – see for example figure 1, column 3 lines 52-59 and column 4 lines 1-12.

Referring to claim 28, Beatty discloses the streamer further comprises at least one grommet – see at the attachment of item 23 to item 51 in figures 1 and 7.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6-15, 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,218,976 to Luebbers in view of U.S. Patent No. 5,522,320 to Dillehay and U.S. Patent No. 3,612,857 to Beatty.

Referring to claim 1, Luebbers discloses a mortar cartridge assembly comprising, a shell body – at 3, a propellant – at 9-11, an ignition cartridge – at 5a, for igniting the propellant, a fuze – at 1, a smoke producing composition – at 7a,7b, comprising a smoke producing agent – at 7a, a metal canister – at 12-14, for containing and protecting the smoke producing composition – see the drawing figure, and a drag assembly – at 5. Luebbers does not disclose the smoke producing

composition an organic smoke producing agent, an oxidizer, a fuel and a binder. Dillehay does disclose the smoke producing composition is an organic smoke producing agent, an oxidizer, a fuel and a binder – see column 4 lines 37-53. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers and add the organic smoke-producing agent of Dillehay, so as to allow for the device to have a low toxicity during use. Luebbers as modified by Dillehay further does not disclose the drag assembly comprising one or more ribbon streamers to slow the descent of the canister. Beatty does disclose the drag assembly comprising one or more ribbon streamers – at 23 and/or 51, to slow the descent of the canister – at 11 and/or 16 and/or 22 – see for example figure 1 and column 3 lines 52-59 and column 4 lines 1-12. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and add the drag assembly comprising ribbon streamers of Beatty, so as to allow for the device to be easily seen and to control the flight of the device.

Referring to claim 6, Luebbers as modified by Dillehay and Beatty further discloses the smoke producing composition comprises a terepthalic acid based smoke producing agent – see for example column 4 lines 45-53 of Dillehay.

Referring to claim 7, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose and 1 weight percent a polyvinyl alcohol binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations

are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose and 1 weight percent a polyvinyl alcohol binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 8, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 9, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises between 70 to 100 weight percent terephthalic acid and 30 to 0 weight percent pentaerythritol. However, applicant does not disclose the smoke producing composition comprises 70 to 100 weight percent terephthalic acid and 30 to 0 weight percent pentaerythritol are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises between 70 to 100 weight percent terephthalic acid and 30 to 0 weight percent pentaerythritol, so as to allow for the smoke producing composition to be environmentally friendly.

Referring to claim 10, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose and 1 weight percent of polyvinyl alcohol binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a mixture of 53 to 57 weight percent Terepthalic acid, 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium

chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose and 1 weight percent of polyvinyl alcohol binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 11, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a mixture of 70 to 100 weight percent terephthalic acid and 30 to 0 weight percent pentaerythritol, wherein the terephthalic acid and the pentaerythritol together comprise 53 to 57 weight percent of the smoke producing composition, wherein the smoke producing composition further discloses 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a mixture of 70 to 100 weight percent terephthalic acid and 30 to 0 weight percent pentaerythritol, wherein the terephthalic acid and the pentaerythritol together comprise 53 to 57 weight percent of the smoke producing composition, wherein the smoke producing composition further discloses 3 to 6 weight percent Magnesium Carbonate, 23 weight percent potassium chlorate, 1 to 3 weight percent stearic acid, 14 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 12, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 40.2 to 43.2 weight percent dye, solvent yellow 33, 20.5 to 24.5 weight percent potassium chlorate, 17.5 to 23.5 weight percent magnesium chlorate, 13.8 to 16.8 weight percent sucrose and not more than 2 weight percent polyvinyl alcohol binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 40.2 to 43.2 weight percent dye, solvent yellow 33, 20.5 to 24.5 weight percent potassium chlorate, 17.5 to 23.5 weight percent magnesium chlorate, 13.8 to 16.8 weight percent sucrose and not more than 2 weight percent polyvinyl alcohol binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 13, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 40.2 to 43.2 weight percent dye, solvent yellow 33, 20.5 to 24.5 weight percent potassium chlorate, 17.5 to 23.5 weight percent magnesium chlorate, 13.8 to 16.8 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of

other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 40.2 to 43.2 weight percent dye, solvent yellow 33, 20.5 to 24.5 weight percent potassium chlorate, 17.5 to 23.5 weight percent magnesium chlorate, 13.8 to 16.8 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 14, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 12 to 13 weight percent dye, solvent yellow 33, 28.5 to 30.5 weight percent dye solvent green 3, 23 to 26 weight percent potassium chlorate, 15 to 19 weight percent magnesium carbonate, 15.5-17.5 weight percent sucrose and not more than 2 weight percent polyvinyl alcohol binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a yellow smoke generating composition, which comprises a yellow smoke generating composition, which comprises a mixture of 12 to 13 weight percent dye, solvent yellow 33, 28.5 to 30.5 weight percent dye solvent green 3, 23 to 26 weight percent potassium chlorate, 15 to 19

weight percent magnesium carbonate, 15.5-17.5 weight percent sucrose and not more than 2 weight percent polyvinyl alcohol binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 15, Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing composition comprises a yellow smoke generating composition, which comprises a mixture of 12 to 13 weight percent dye, solvent yellow 33, 28.5 to 30.5 weight percent dye solvent green 3, 23 to 26 weight percent potassium chlorate, 15 to 19 weight percent magnesium carbonate, 15.5-17.5 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder. However, applicant does not disclose that the weight percents of the specific compositions which comprise the smoke producing agent are critical to the operation of the claimed device in view of other values for the weight percents of the smoke producing components and these limitations are design characteristics found through experimentation. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing composition comprises a yellow smoke generating composition, which comprises a yellow smoke generating composition, which comprises a mixture of 12 to 13 weight percent dye, solvent yellow 33, 28.5 to 30.5 weight percent dye solvent green 3, 23 to 26 weight percent potassium chlorate, 15 to 19 weight percent magnesium carbonate, 15.5-17.5 weight percent sucrose wherein 12% to 100% of the sucrose is polymerized to become a binder, so as to allow for the smoke producing agent to be environmentally friendly.

Referring to claim 17, Luebbers as modified by Dillehay and Beatty further discloses the smoke producing composition is formed into at least one consolidated element – at 7a,7b, of

Luebbers, dimensioned to fit within the metal canister – at 11-13, and comprising a longitudinal channel – at 8, adapted to allow for expansion of the smoke producing composition during firing and to improve ignition reliability – see for example the drawing figure of Luebbers.

Referring to claim 18, Luebbers as modified by Dillehay and Beatty further discloses the at least one consolidated element is in the shape of an annulus – see for example at 7a,7b in the drawing figure of Luebbers.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luebbers as modified by Dillehay and Beatty as applied to claim 1 above, and further in view of U.S. Patent No. 3,636,881 to Godfrey. Luebbers as modified by Dillehay and Beatty does not disclose the smoke producing agent comprises an aliphatic or aromatic dicarboxylic acid. Godfrey does disclose the smoke producing agent comprises an aliphatic or aromatic dicarboxylic acid – see for example column 3 lines 6-26. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the smoke producing agent comprising an aliphatic or aromatic dicarboxylic acid of Godfrey, so as to allow for the device to produce less contaminants in the gas stream upon use of the device.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luebbers as modified by Dillehay, Beatty and Godfrey as applied to claim 2 above, and further in view of U.S. Patent No. 4,898,098 to Frey et al.

Referring to claim 3, Luebbers as modified by Dillehay, Beatty and Godfrey does not disclose the binder comprises an organic compound. Frey et al. does disclose the binder comprises an organic compound – see for example column 2 lines 65-68 and column 3 lines 1-10. Therefore it would have been obvious to one of ordinary skill in the art to take the device of

Luebbers as modified by Dillehay, Beatty and Godfrey and add the binders comprising an organic compound of Frey et al., so as to allow for the device to be more environmentally friendly.

Referring to claim 5, Luebbers as modified by Dillehay, Beatty and Godfrey further discloses the binder comprises a polymerized sucrose – see for example column 5 lines 11-23 of Dillehay.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luebbers as modified by Dillehay, Beatty, Godfrey and Frey et al. as applied to claim 3 above, and further in view of U.S. Patent No. 6,176,517 to Hamilton et al. Luebbers as modified by Dillehay, Beatty, Godfrey and Frey et al. does not disclose the binder comprises a Polyvinyl Alcohol. Hamilton et al. does disclose the binder comprises polyvinyl alcohol – see for example column 10 lines 5-11. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay, Beatty, Godfrey and Frey et al. and add the binder comprising polyvinyl alcohol of Hamilton et al., so as to allow for the components of the smoke producing composition to be securely held together.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luebbers as modified by Dillehay and Beatty as applied to claim 1 above, and further in view of U.S. Patent No. 5,661,257 to Nielson et al. Luebbers as modified by Dillehay and Beatty does not disclose the cartridge size is 120mm. Nielson et al. does disclose the cartridge size is 120mm – see for example column 2 lines 27-37. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Luebbers as modified by Dillehay and Beatty and add the cartridge

size being 120mm of Nielson et al., so as to allow for the device to be used in standard firing devices.

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielson et al. in view of U.S. Patent No. 4,446,794 to Simmons.

Referring to claim 19, Nielson et al. discloses a canister and protecting a smoke producing composition within a smoke producing cartridge comprising, a right circular steel cylinder – at 10,48, comprising a top and a bottom – see for example figure 1, dimensioned to be secured within the shell body of a 120mm mortar cartridge – see for example column 4 lines 35-46, a reinforcing plate – at 42 or 32, affixed to the bottom of the cylinder – see for example figure 1, and an attachment stud – at 44 or 30, affixed to the bottom surface of the reinforcing plate for attaching a drag force assembly – at 40 or 24 – see for example figure 1. Nielson et al. does not disclose the right circular cylinder is made of steel and that the reinforcing plate is made of steel. Simmons does disclose the cylinder – at 2 and the reinforcing plate – at 2g are made of steel – see for example column 1 lines 59-68 and column 2 lines 1-14. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Nielson et al. and add the cylinder and reinforcing plate being made of steel of Simmons, so as to allow for the device to be made stronger and more durable.

Referring to claim 20, Nielson et al. as modified by Simmons does not disclose the cylinder comprises an outer diameter of 93.35mm a height of 133mm and a sidewall thickness of 1.90mm. However, applicant does not disclose that the dimensions of the cylinder are critical to the operation of the invention in view of differing values of the dimensions and these limitations are design characteristics found through experimentation. Therefore it would have been obvious

to one of ordinary skill in the art to take the device of Nielson et al. as modified by Simmons and add the cylinder comprises an outer diameter of 93.35mm a height of 133mm and a side wall thickness of 1.90mm, so as to allow for the device to be of sufficient size to house a large quantity of smoke producing composition.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beatty as applied to claim 25 above.

Referring to claim 26, Beatty does not disclose the drag assembly is adapted to generate a drag force for slowing down the canister from approximately 82 meters/second to about 27 meters/second. However, applicant does not disclose that the drag assembly slowing the canister from 82 meters/second to 27 meters/second is critical to the operation of the device in view of other values of the speed of the canister. Therefore, it would have been obvious to one of ordinary skill in the art to take the device of Beatty and add the drag assembly slowing the descent of the canister from 82 meters/second to 27 meters/second, so as to allow for the canister to move at a more controlled and safer speed as it comes into contact with the ground after flight.

Claims 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beatty as applied to claim 26 above, and further in view of U.S. Patent No. 5,251,562 to Chemiere et al.

Referring to claim 27, Beatty further discloses a plurality of streamers – at 23 – see figure 1. Beatty does not disclose the streamer is made of nylon. Chemiere et al. does disclose the streamer – at 2-4, is made of nylon – see for example column 2 lines 38-45. Therefore it would have been obvious to one of ordinary skill in the art to take the device of Beatty and add the nylon streamers of Chemiere et al., so as to allow for the streamer to be made durable and flexible.

Referring to claim 29, Beatty as modified by Chemiere et al. further discloses the streamer – at 23 of Beatty or – at 2-4 of Chemiere et al., is attached to the canister – at 11,16, of Beatty and – at 1 of Chemiere et al. – see for example column 4 lines 1-12 of Beatty and in figure 1 of Chemiere et al. Beatty as modified by Chemiere et al. does not disclose a spring pin for attachment to the canister. However, it would have been obvious to one of ordinary skill in the art to take the device of Beatty as modified by Chemiere et al. and add an alternate fastening mechanism such as a spring pin, so as to allow for the streamer to be securely held to the canister.

***Allowable Subject Matter***

5. Claims 21-24 are allowed.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to mortar assemblies in general:

U.S. Pat. No. 1,875,985 to Brandt – shows smoke-generating cartridge

U.S. Pat. No. 4,109,579 to Carter – shows smoke-generating cartridge

U.S. Pat. No. 4,186,664 to Huber et al. – shows organic smoke composition

U.S. Pat. No. 4,294,172 to Rauschert et al. – shows cartridge with streamer

U.S. Pat. No. 4,418,624 to Willi et al. – shows streamers

U.S. Pat. No. 4,549,487 to Jensen – shows smoke generating cartridge

U.S. Pat. No. 4,898,097 to Jordan et al. – shows smoke generating composition

U.S. Pat. No. 5,448,937 to Buc et al. – shows streamers

U.S. Pat. No. 6,600,002 to Sanderson et al. – shows smoke generating cartridge

GB Pat. No. 2056632 – shows smoke generating cartridge

DE Pat. No. 3206497 – shows drag force assembly on cartridge

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Parsley whose telephone number is (571) 272-6890. The examiner can normally be reached on Monday-Friday from 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Poon can be reached on (571) 272-6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Parsley
Patent Examiner
Art Unit 3643